Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	RM-9267
An Allocation of Spectrum for the	)	
Private Mobile Radio Services	)	

TO: The Commission

COMMENTS OF CORTLAND E. RICHMOND
ON A PETITION FOR RULE MAKING SUBMITTED BY THE
LAND MOBILE COMMUNICATIONS COUNCIL

May 29, 1998

This writer has examined LMCC's Petition, and comments in opposition.

LMCC basically asks that the Commission provide more usable communications channels than it has, and is attempting to avoid having its members forced to pay, either through equipment upgrades or through the auction process, to resolve mutually contradictory uses. LMCC is stating that its members and industry frequency coordinating councils are unable to satisfactorily resolve conflicts over spectrum use, neither by agreement nor by adopting more efficient technology and spectrum use patterns.

There are good and proper reasons why the Commission should not, immediately and in whole, grant LMCC's Petition.

1. A large part of the inability to successfully share frequencies is due to competition between PMRS licensees, each vying for the most favorable locations and frequencies. Coordinating councils notwithstanding, PMRS will be unable to keep doing things the way they have been done in the past without additional spectrum. By Petitioning the Commission for additional spectrum, LMCC has indicated that it and its members do not intend to adapt to the future, but rather they mean to stick with what is essential 1950's technology and make up for deficiencies inherent it its continued use by occupying more channels.

2. CMRS providers have developed highly successful trunking systems which have made same-channel interference essentially a thing of the past, and without using more spectrum than is available to PMRS licensees at this time. If licensees were willing to pool their assigned frequencies, they could also operate trunking systems and effectively deal with many of the problems which have apparently lead to this Petition. LMCC's objections to CMRS are couched in terms of a restrictive view of that Service, based on 800 MHz trunking and cellular systems, but there is no reason why PMRS cannot use similar techniques in its own allocations.

Moreover, the Commission, when assigning blocks of frequencies to mutually exclusive applicants, has developed an effective and beneficial means of resolving conflicts by spectrum auctions. LMCC even states in its petition that, in the competitive bidding process, the Commission has an effective tool for resolving mutually exclusive applications among CMRS licensees.

> "The regulatory structure that the Commission has adopted for CMRS has been wide-area geographic licensing and a system of competitive bidding for the resolution of mutually exclusive applications. Insofar as this policy has been implemented for newly allocated CMRS spectrum, it has been largely successful. "

3. LMCC points out that the division of spectrum among PMRS and CMRS licensees has resulted in an inequity between CMRS and PMRS licensees.

> "However, because the Commission has begun to apply this regulatory structure to the CMRS that were formerly licensed as PMRS' and because these CMRS systems have been licensed on bands of spectrum that are heavily occupied by systems that remain PMRS, the Commission has effectively removed large blocks of spectrum from PMRS allocations ... "

LMCC's point depends, however, on the fact that the remaining PMRS frequencies are not being utilized as efficiently as CMRS, because they have declined to adopt the same technologies. Had PMRS licensees been able and willing to expeditiously adopt the same technology as CMRS, there would at this time be no need for the large blocks of spectrum LMCC and its members wish to obtain.

4. LMCC apparently believes the Commission has been dilatory in allocating spectrum through processes other than auction, and states that the reason for this has been monies available from auction:

> "Further, because the Commission has been able to raise substantial revenues for the Federal Treasury through the auctioning of the electromagnetic spectrum, it has been hesitant to allocate any spectrum on a non-auction basis."

Absent a Commission statement on this subject, however, there appears to be little reason for its presence.

5. In an apparent attempt to inextricably intertwine private mobile radio services with the public safety radio services -- arguably, at least in LMCC's opinion, not limited to police, fire, medical and other services whose services benefit the public directly, LMCC asserts that while the 1997 amendments to the Telecommunications Act and redefined the Commission's competitive bidding authority to allow competitive bidding in the PMRS,

> "...Under the Commission's revised auction authority, the exemption from auctions is limited to "public safety radio services." However, such services are defined to include "PMRS internal radio services" that "protect the safety of life, health and property. "
>
> "...While the 1997 amendments to the Act may have, arguably, limited the class of applicants that are inherently exempt from auctions, nothing in the 1997 amendments altered the fundamental, specifically enumerated limits on the Commission's competitive bidding authority. "
>
> "Under section 309(j)(4)(C) of the Act, the Commission -- in designing a system of competitive bidding -- is charged by Congress to consider "the characteristics of the proposed service" in order to "prescribe area designations and bandwidth assignments that promote (i) an equitable distribution of licenses and services among geographic areas, (ii) economic opportunity for a wide variety of applicants, including small businesses."

Congress did not say that all PMRS providers should be classified as public service entities, but only those whose primary mission was already the public welfare. LMCC cannot reasonably expect that all of its members should be considered to fit that description.

Petitioner's footnote 42, reproduced here, makes this clear:

> "42
> The 97 Budget Act exempted "public safety radio services" from auctions. Sec. 3002 (a)(2). The accompanying Congressional report explained that this term includes both traditional public safety entities and others, including utilities, pipelines, railroads, metropolitan transit authorities, PMRS ambulances and auto-emergency organizations, that are used to protect the safety of life, health and property." 143 Congressional Record H6172 (July 29, 1997)."

6. LMCC may have found a real problem in asserting that wide-area geographic licenses are inappropriate for PMRS. However, it ignores the fact that other means than broader allocations could meet what it describes as the " 'character' of PMRS 'service' ." LMCC asserts that

> "Even the most superficial analysis of the "character" of PMRS "service" reveals that wide-area geographic license "designations" are an inappropriate method for the assignment of PMRS wireless licenses. Because PMRS systems are inherently designed for the service of small or distinct geographic areas (typically, less than 1,000 square miles and often fractions of a square mile, in the case of low power operations), the wide-area model applied for CMRS systems is inapplicable. By their very nature PMRS systems require site-by-site licensing."

On closer examination, service presently provided over "fractions of a square mile" could, and should be provided by means other than PMRS, even without the necessity of a license, under Part 15, which has grown under Commission auspices into a tool of reasonable utility in this kind of service.

Moreover, properly engineered and sited CMRS systems are technically able to serve both the wide-area and short-range communications which PMRS systems seem, from the remarks made by LMCC, unable to provide.

As to site-by-site licensing, this is a matter which could be easily dealt with by the Commission. To assert that a thousand operators, each with a few radio sets, must necessarily operate under separate licenses, begs the point. Licenses are issued based on the need to regulate the operation of stations they authorize. The Commission determines, with public input, what structure is needed to meet that requirement.

8. LMCC appears to say that the Commission has no other tools available to it to meet it's (PMRS's) need for spectrum:

> "The Commission's competitive bidding authority is further restricted by Sectionb309(j)(6)(E) of the Act, which states that nothing in the statute should 'be construed to relieve the Commission of the obligation in the public interest to continue to use engineering solutions, negotiation, threshold qualifications, service regulations, and other means in order to avoid mutual exclusivity'. "

But those "engineering solutions, negotiation, threshold qualifications, service regulations and other means" include any action the commission might take even without granting the Petition, at least, not as LMCC has framed it.

9. LMCC reiterates that the Commission's method of issuing licenses aggravates, as LMCC sees things, the problem:

> "By implementing wide-area geographic licensing schemes for PMRS applicants, the Commission not only fails to make any attempt to avoid mutual exclusivity, it actually creates mutual exclusivity where it does not naturally exist. In the case of shared spectrum, mutual exclusivity will never exist, because multiple applications for the same frequency may be granted."

LMCC says in one breath that the FCC is creating mutual exclusivity, and in the next, that the Commission is NOT creating exclusivity. Frequency re-use is a fact of life. The question is not whether frequencies are to be re-used, but how. This will be true no matter how much spectrum is available.

10. LMCC repeats its point with a slightly different -- and incorrect -- emphasis:

> "The great majority of PMRS wireless systems exist in a shared or coordinated environment. Under this licensing scheme, the Commission's certified frequency advisory committees are charged to coordinate pending applications and to recommend frequency assignments that will minimize adjacent and co-channel interference both to and from incumbent licensees. In a shared environment, the coordinating committees select frequencies based on the lowest acceptable level of system degradation. As a result mutually exclusive applications are not filed, and auctions are never an appropriate licensing mechanism in this context."

Sharing and coordination cannot be held up as reasons not to use auctions for frequency management and at the same time cited as evidence of a need for spectrum. They cannot be good and bad at the same time. Sharing and coordination are appropriate frequency management tools -- and so are auctions. The purpose of auctions is not to reduce the number of parties communicating; it is to reduce the number of conflicts. Where coordination has failed to do so because of an excessive number of conflicting licensees, auctions are another way to reduce the conflict.

11. LMCC cites examples of problems it ascribes entirely to lack of spectrum.:

" Numerous examples can be given of the impact of this spectrum shortage on PMRS users. For example, the owner of a start-up limousine company that serves the Brooklyn, New York, area reports that the lack of available spectrum is prohibiting the growth of his business. Like other small non-communications business owners, he found the prospect of entering an auction entirely unrealistic. As a result, he is forced to use a heavily congested, shared UHF channel. Common waits of 10-15 minutes for a clear channel regularly delay the dispatch of his drivers. During the many peak times of the day and night when no open channels are available, he is forced to use a CMRS system that is not only dramatically more expensive but does not provide dispatch service."

What is lacking here is not, frequencies, but communication. If CMRS is more expensive, it is because it does not have the advantage of PMRS ins an installed base of equipment, but is still recouping the cost of systems, and because it does in fact provide the extra value for which its subscribers are willing to pay. With reference to dispatching, CMRS provides communication; if a dispatcher is needed, one can used or not, as the user prefers. This lack is not fatal, and it is not even material to the Petition.

LMCC says that lack of spectrum causes a risk of injury or death, and cites cargo handling at the Port of Los Angeles, where shared UHF frequencies are used. It attributes two deaths to confusion arising from spectrum congestion when one crane operator heard commands intended for another:

"Currently, port authorities use shared UHF frequencies for these critical operations, which are often obstructed due to the increased congestion on these channels. This congestion can, and does, bring life-threatening consequences when operators hear "Drop it!" from other nearby users and mistakenly believe the command was intended for them. Two deaths in the Los Angeles port in the past 90 days were the results of this type of mix-communication from a shared channel. Given sufficient spectrum, these disasters could be avoided, as frequency advisory committees could ensure that no two stevedore operations were licensed on the same channels."

With all due regard for the seriousness of the operation, and its danger, this is too simple an explanation. When similar operations must be conducted in close proximity, it is a coordinator's duty to assign frequencies so that users do not mistake communications intended for another user as being meant for themselves. In the example cited, sharing between two overhead delivery systems could be expected to introduce confusion, and should have been avoided.

> "A major airline reports that traffic has been growing at a rate of 4% per year in the U.S. and that cargo traffic is expected to grow at a 20% rate. The amount of spectrum available to them, on the other hand, has not grown at all in the last 30 years."

While the amount of spectrum has not increased, the number of usable channels has kept pace by reducing deviation and introducing receivers better able to reject adjacent-channel interference. LMCC reveals by its Petition that it wishes mainly to avoid the expense of a new generation of equipment. The indication here is not that LMCC has justified new spectrum, but that it is seeking new spectrum to avoid the capital expense and effort of improving member facilities. This serves its membership, but not the public interest.

> "Public Service Electric & Gas Company ("PSE&G"), headquartered in Newark, NJ, suffers from a severe lack of available MAS and telemetry spectrum used for meter reading and remote control purposes. Due to this lack of spectrum, the gas company is forced to use public carrier services, which increase their operating costs by roughly $1.2 million per year. In addition to the incremental costs, the service from these public carriers is unreliable, as they now must compete for channels with all other users. In the event of any emergency, such as bad weather, traffic jams and traffic accidents when cellular use increases, the ability of PSE&G to perform critical operations that protect the safety of the general public may be compromised."

As important as remote control is for a public utility, it would seem more proper to separate it from the more prosaic, and surely less urgent, chore of reading the meters. The use of radio telemetry for meter reading instanced above provided an economic benefit by eliminating the need for meter readers to enter properties and premises to do what is now done from afar. If meter readers must now approach the utility closet more closely to receive a good signal, a great deal of this is not due to interference from authorized users, but to the multiplicity of licensed, unlicensed intentional and unintentional radiators with which the modern community is afflicted, and additional spectrum in the same ranges will not cure this.

12. LMCC sums up its requirements before once again asserting that its members deserve special treatment:

> "These examples of the real world effect of the PMRS wireless spectrum shortage are repeated again and again in industry after industry across the entire nation. Accordingly, the LMCC urges the Commission to adopt policies that not only address this spectrum shortage but also recognize the vital role that PMRS radio systems play in the U.S. economy, as well as the unique licensing requirements of these systems."

The examples cited as typical are in fact not typical in most places, but only in a few physically congested, high-activity areas. The Commission has in the past made unused spectrum available from frequencies allotted to UHF television, and just before this Petition was received, the Commission announced it intended to make a large block of such frequencies available in the 600 MHz area. One appropriate policy response to LMCC's request would be to allot a portion of the new allocation for PMRS and thus relieve pressure on the existing allocations. However, as the actual request makes clear, more frequencies are not enough; LMCC want frequencies that can be used with existing equipment.

13. LMCC says:

> "The needs of the PMRS wireless community have been well established in a number of government agency and industry reports. While these reports come from a variety of perspectives, they reach remarkably similar conclusions due to changing demographics, regulatory developments, and technological advancements, there is a drastic shortage of spectrum available for PMRS licensees."

Again, this assumes that PMRS licensees continue to use present modulation and channel occupancies, or at least, that they resist more efficient usage. LMCC admits this is what they will do:

> "While this narrowbanding presents the potential for increased spectrum capacity, transition delays and interference problems limit the potential benefits..." (underline added)

14. LMCC goes out of its way to make a spurious argument against the use of trunking systems:

> "Overall, both low and high band VHF licenses are assigned on a time-shared, or non-protected service area ("non-PSA") basis. That is, there are no physical minimum spacing distances regulated between co-channel systems. This has historically resulted in the efficient use of the spectrum, i.e. more users per megahertz in a given geographical area. However, because of drastic spectrum shortages in high-demand urban areas, more and more users are packed into a given area. This overloading results in the degradation of the fundamental quality of the communications. With little or no on-going monitoring of this quality level, overall communications quality degradations are hidden from view.

Furthermore, this non-PSA basis generally precludes use of some newer technologies, such as trunked systems, while also limiting potential for "guaranteed" higher reliability applications, such as critical data links. Finally, the Commission in its "refarming" proceeding, has begun a transition from 15 kHz channels to 7.5 kHz channels." (Underline added)

The argument is spurious; trunking makes physical spacing less important, not more, and by sharing frequencies in time, as well as space, more users may be accommodated in a given spectrum. If a change in regulatory emphasis is required to bring this about, the Commission is ideally situated, with this Petition, to act.

15. LMCC now begins to justify wider spectrum on the basis of an imaginary need; full-duplex voice and data operation.

> "For a number of reasons the 450-470 MHz UHF band is considered by many to be the urban "work-horse" band. Most importantly, the paired frequency structure of the band allows reasonably straightforward implementation of duplex base station and repeater configurations. However, the relatively small 5 MHz spacings between the pairs generally disallows full duplex portable radios. Applications that might benefit from full-duplex links, data for example, are generally unavailable." (Underline added)

LMCC cannot assert on the one hand that it needs to reduce confusion (10, above) and on the other hand that it needs full-duplex voice operation. Where confusion must be reduced, one must either speak or listen. Moreover, it is not necessary nor even desirable to use full-duplex for data; data is today satisfactorily exchanged even at high rates over semi-duplex links occupying half the spectrum of what LMCC holds up as a reason for new channels. If this means what it seems, to, LMCC is saying that it needs new spectrum so it can be less efficient in using it. Efficient use of spectrum is, however, a Commission mandate.

16. The Petition points out that LMCC considers spectrum refarming an unsatisfactory solution to its users need:

> "As in VHF, the "refarming" proceeding sets a strong direction toward licensing of only narrower channels. The transitional concerns are heightened due to the fact that this is the urban "work-horse" band, with more complex repeater systems in place. Further, whereas the VHF transition is to be a one-step process (15 kHz to 7.5 kHz channels), the UHF band will experience a two-step process, moving first from 25 kHz to 12.5 kHz, then subsequently to 6.25 kHz. However, the perceived 4:1 packing density increase will not be attained for decades due to the need for a reasonable transition period for existing equipment..." (Underline added)

This, in spite of the fact that refarming could double or triple available channels, and without requiring new allocations.

17. LMCC does agree that unused television frequencies are a suitable response to its members' needs:

> "The 470-512 MHz band also qualifies for urban "work-horse" status, for the same reasons as the 450-470 MHz band. Unfortunately, the band is only available in 11 cities, with either 6 or 12 MHz assignable. ..."
> (Underline added)

Having said this, LMCC should thus be able to accept former television spectrum which is available in every city, recently released in the 600 MHz area, which shares most of the 400-500 MHz band's characteristics.

18. The petitioners go out of their way to accentuate the limited relief that refarming might bring:

> "In calculating the amount of spectrum that the PMRS wireless community will require, the NTIA estimates that technological advancements, such as the transition to narrowband equipment, will alleviate some of the congestion in existing allocations and will maximize the relief any new allocations will provide. However, early experience with the implementation of the "refarming" proceeding shows that the transition to narrowband channels will provide only limited relief.
> (Underline added)

This argument is overworked and not as important as the petitioners would have it; refarming would and could proceed much more expeditiously, and be much more useful to petitioners and other licensees, if they would just get on with it. Petitioners cannot legitimately claim that refarming will be of limited help when petitioners and others have hindered its speedy completion.

19. LMCC also attempts to discredit time-sharing. However, its logic is flawed. LMCC says:

> "Time sharing of channels in a given geographic area is very spectrum efficient for multiple small users, but only when their modes of operation and technology use are quite similar. Mixing isochronous voice and asynchronous data services has always been a problem, engendering channel monitoring issues. Generally the "solution" was to depress the use of data, an important application for PMRS users. Mixing transmission technologies, i.e. analog and digital voice, is also problematic and will become more common in the "post-refarming" environment..."

The argument fails because, when time-shared systems are controlled centrally, i.e.: trunked, the type of information being sent is of little importance. No single user would be subjected to the presence of an incompatible modulation on the channels to which that user's communications were directed.

> "Similarly, mixing different channel bandwidths also causes substantial compromises and, eventually, when all bands are narrowed, yields greater adjacent channel interference levels."

This is an issue only if users cannot agree on a uniform technology. The Commission is in a position to direct the use of such technology, which would do much to ease the congestion of which Petitioners complain.

If Petitioner were desirous of avoiding mixing of modes, it would do well to recommend digital, trunked technology, which is capable of delivering essentially zero-blockage access to system users. Petitioners have not in this document indicated a willingness to do so, and have gone out of their way to attempt to discredit it based on a non-existent need for a many-times average peak usage which normally engineered systems do not deliver. This argument also fails, as appropriate prioritization of users -- which is good enough even for military communications -- would deal with peak-use demands.

20. LMCC asserts that:

> "The net effect is that "refarming" with 4:1 channel splits cannot ultimately yield a 4:1 user capacity increase. Unless it is assumed that the overall communications quality level may be degraded, a 3:1 capacity increase is more likely. Attached at Appendix C is a projection of the capacity increases that will be achieved through the transition to narrowband equipment. This analysis projects only a 2:1 capacity increase as far out as 2010, with the full benefits of "refarming" not approached until 2020."

Any lack of capacity increase projected is largely due to a relaxed time schedule for phasing out older equipment. If capacity is indeed as important as LMCC and the speed with which this Petition was considered would indicate, then an appropriate answer would be to cut the time for phasing out older equipment by a factor of three or four.

Further, LMCC admits that time, or rather, its member's inability or unwillingness to move quickly, what, from, it's perspective, detracts from the utility of spectrum refarming:

"This is not to say that the "refarming" initiative is inherently flawed but, rather, to recognize that the process is one of attempting to keep pace with, rather than effectively solve, the spectrum shortage problem. In addition, it should be clear that any definition of "spectrum use efficiency" or "capacity" requires that some communications quality level reference be put in place and maintained constant for comparison purposes."

21. Notwithstanding this writer's objections to Petitioner's proposals, it must be recognized that users in the PMRS do experience problems, whether self-generated, or imposed on them. LMCC is not inaccurate in describing how this problem was allowed to propagate:

"When PMRS began to develop serious spectrum shortages in urban areas, rather than supplying additional spectrum to meet the needs of applicants, the solution has been to increase the number of co-channel systems licensed on a given frequency. The net effect has been that "efficiency" was theoretically improved through forced degradation of communications quality -- more and more units packed into a given geo-spectrum space. Thus, one major component of the PMRS spectrum shortage problem is the need to achieve and maintain some acceptable level of communications quality for the industry that is generally higher than the level in many urban areas today."

LMCC is at least attempting to forestall future problems in its proposal. Had there been adequate communication between and among licensees, their organizations (such as LMCC), and the Commission, it is possible that whatever problems exist in the PMRS today would have been dealt with in a more forward-looking manner. In part, this lack of feedback may be laid at the feet of unwillingness to change, an unwillingness which is all too apparent in the extant proceeding. This writer differs with Petitioner's proposals, which often amount to "more of the same, all over again," but not at all with Petitioner's objectives.

22. LMCC assets that more spectrum is needed for what it calls broadband applications. This bears looking at, but it turns out that much of what LMCC calls broadband is in fact information which may be economically, practically and easily moved at rates requiring bandwidths not more than present systems are able to support. Valid broadband services probably do require spectrum, but it is not clear from Petitioner's proposals and arguments that the uses referred to are among those which would be served.

"...many of these applications require access to broadband channels. Examples include:
· GPS location devices for the tracking and mapping of delivery, taxicab and livery, and security services.
· Mobile facsimile services for the transmission of text and images.

· Data capabilities for document processing such as customer database information, messages, files, etc.
· Data capabilities for production processes such as inventory tracking, production cycles, shipments to billing changes on customer files.
· Image transmission of still photographs such as real estate properties.
· Slow scan video transmission of images, and full motion video for coordinating activities such as heavy construction in progress.
· Telemetry devices for monitoring, signaling, or stopping and starting automated operations.
· Connection capabilities to PBX and or outside cellular systems.
· Remote interface with internal computer LAN systems, corporate intranet, and the Internet."

These modes are almost all being used, now, by Radio Amateurs, using narrow-band systems, and it is not evident from the nature of the information transmitted that a broadband channel is required for any of them. Moreover, were there such a need, broadband services and voice could indeed coexist; once digitized, voice can easily be multiplexed with data and separated with no degradation of communications. Accordingly, Petitioner's argument here, too, should be disregarded.

23. LMCC has attempted to convince the commission that its members are not actually using PMRS for gain. To assert that PMRS systems are not operated for money borders on the ridiculous. LMCC says:

> "The hallmark of the PMRS industry is that it is an important tool for American industry and for the safe operation of the nation's critical infrastructure. PMRS licensees do not operate their systems as a source of revenue but rather as a means of supporting the day-to-day needs of their businesses to protect the safety of their employees, customers, and the general public, and to effectively complete in a global market place. "

Reduced to bare essentials, LMCC asserts that its members do not use their systems to make money, but only to help their businesses make money. This is a difference so fine as to be invisible. The argument contains its own counter, and should be rejected.

24. Petitioner goes on to admit that PMRS offers benefits, as it says, "Across the economy." It is quite obvious that Petitioner is not speaking of widespread benefits here, but to a rather narrower benefit: its own membership. This is a proper thing to do and one might well wonder why LMCC would go to such pains to obscure what it is doing for those who avail themselves of its help. Economic gain is not a disqualification for the Commission's consideration. It is only one among many factors which this writer hopes the Commission will consider when dealing with this matter.

> "As new applications for PMRS use become available there is the potential for wide-spread benefits across the economy. However, if adequate spectrum is not available for the implementation of these new applications, important opportunities will be lost for the American consumer, and American industry will lose a competitive advantage. To a certain extent this undesirable outcome is already being realized across a broad cross-section of industries and services."

LMCC speaks only for its own membership. Here it goes beyond that. Its own membership will certainly suffer if something is not done, but the price of whatever action is taken should be paid by those to whom the benefit accrues. Where this proposal oversteps is in requiring others, spectrum users and even consumers, to bear the burden of correcting problems arguably caused by the inaction of those PMRS users who now seek relief.

25. LMCC has stated that regulatory changes aggravated the shortage of spectrum space. While it appears LMCC means that spectrum was allotted to others, and not PMRS, this may be an otherwise accurate rendering of recent history.

> "In addition to the growing need for spectrum for new services, and to accommodate future growth of traditional services, the spectrum shortage crisis has been aggravated by regulatory changes. As discussed at paragraphs 9-15 supra, bands of PMRS spectrum have been reallocated for CMRS services and slated for auction. In 1991, a portion of the 220-222 MHz band was allocated by the FCC for "non-commercial" nationwide land mobile radio systems. This new band presented the opportunity for new and innovative PMRS applications. For instance, a consortium of approximately 30 utility companies filed applications to develop a nationwide not-for-profit radio system that would be used by the utilities to meet their internal day-to-day needs for dispatch communications, as well as interoperation between utility crews responding to a widespread emergency. However, these innovative PMRS applications never got the chance to develop, because the FCC never acted on these applications. Finally, in 1997 the FCC decided to eliminate the "non-commercial" set-aside, to return the applications filed in 1991, and to hold auctions for these channels among new applicants."

Whatever the reasons, those channels in this allocation which should today be fully utilized have been found mostly empty, even near metropolitan areas, when this writer chanced to travel across the country. Anecdotal evidence can of course carry little weight, but it is glaringly obvious that the bands to which PMRS are confined are much more heavily occupied than the 220-222 MHz band, even (or especially) at times of peak traffic.

"In the 800 MHz band, PMRS systems have had a major presence since the band was first allocated and assigned in the 1970's. However, in PR-Docket 93-144, the Commission began the process of introducing geographic licensing to the CMRS services in the 800 MHz band. Initially the Commission decided to split the 800 MHz band into two "pools." The Commission established 200 channels for CMRS use to be assigned by geographic licenses and auctions and reserved 230 channels for small dispatch and "General Category" systems to be licensed on a site-by- site basis. However in the Second Report and Order in this proceeding, the FCC reconsidered its decision to license the 230 channels on a site-by-site basis and announced an auction for geographic area licenses for these channels. The inevitable result of this decision is that all future access to the "General Category" channels in the 800 MHz band will be limited to large CMRS auction winners. Even though there is no mandatory relocation of incumbent PMRS licensees in the pending auction of the "lower 230" 800 MHz channels, these incumbents will be pressured to vacate their license holdings. The reality of the business plan of the eventual auction winner will almost certainly require the relocation of these incumbent systems. Without additional spectrum being made available for their relocation, PMRS licensees in this band face uncertainty at best.

"Additional bands that are being reassigned from PMRS to CMRS use include 900 MHz Multiple Address Systems ("MAS") bands. MAS are point-to-multipoint systems operating in the 900 MHz band which are used by utilities, pipelines, and oil and gas production systems for various telemetry and control functions, including system monitoring, distribution system control, load management, and nuclear warning sirens."
And while MAS are depleted in many areas of the country, industry need for these channels is increasing. This demonstrated demand prompted the FCC to open a new band of MAS channels in 1992. However, the FCC has apparently aborted its efforts to satisfy the strong PMRS need for these channels. Instead, the FCC has initiated a rule making to dismiss all pending PMRS applications, and to declare MAS to be a "commercial" service subject to wide-area geographic licensing and auctions."

It appears here that LMCC is stating that its concerns have not been addressed, but it is not clear that the service presently provided by PMRS MAS systems would not be provided as well by commercial services. Whether those services obtain licenses by auction or Commission assignment seems irrelevant to the proceeding at hand.

> Interservice sharing of the Maritime channels with Industrial/ Land Transportation licensees in areas away from navigable waters was granted in 1996. This interservice arrangement provided much needed spectrum relief in the bands below 800 MHz, without any ill effects on the maritime services. However, in 1997, the Commission froze all interservice applications in anticipation of the wide-area geographic licensing and auctioning of the maritime channels and effectively ended interservice sharing opportunities on these bands."

LMCC here speaks of a pending action which has not been completed. It may indeed represent events as they have occurred, but PMRS members are fairly treated here; everyone who had hoped to make use of the shared frequencies was equally affected.

26. Petitioner states that there is a prevailing school of thought that CMRS can serve PMRS needs. This school of thought prevails because those PMRS needs which cannot be satisfied by CMRS, or a CMRS-like version of PMRS, are exceptions whose importance is overstated in the context of suitability to purpose.

> "As the Commission has emphasized the CMRS services, there has been a prevailing school of thought that PMRS needs can be fully satisfied by CMRS service providers. This belief is misguided. In fact, while nearly all large PMRS licensees maintain contracts with CMRS providers for some of their communications needs, PMRS licensees have additional unique needs that cannot be met by CMRS providers."

Not all PMRS users, nor even a majority, have needs which cannot be met by CMRS. If present PMRS users become a larger part of the CMRS-served population, they will find their unique needs attended to in accordance with their patronage.

27. LMCC makes an effort to discredit CMRS as a viable alternative to PMRS.

> "... While PMRS users subscribe to CMRS services such as cellular and paging in order to meet some of these objectives, it is impractical and often impossible for CMRS services to meet all of the their [sic] needs independently."

This is another overworked fact. Present CMRS systems may in some instances fail to meet specific needs of some PMRS users. That can change.

"PMRS communications systems are generally designed to serve the specific, unique communications needs of the operator of the system. In contrast, CMRS systems are designed to provide a range of services that will appeal to a much broader base of users. As stated in the Wye Report, "in many cases, PMRS users represent a thin and unique market that CMRS providers have little incentive to invest in to serve; there is usually not enough of a return involved to justify the capital investment to serve one or a few PMRS customers."

LMCC here says that PMRS systems are designed with no one's benefit in mind but the owner/operators. This narrow vision on the part of those who design, install and operate PMRS systems is also responsible for much of the congestion with which PMRS users are afflicted. Had PMRS not been so focused on individual user goals, it would have obviated the proceeding here being considered.

"Therefore, PMRS users have a number of unique requirements that cannot be met by CMRS. These are discussed at length below:

28. It is worthwhile, before proceeding to the particular points raised in this section of the Petition, to note that the following arguments depend on unique requirements which LMCC asserts , erroneously, that PMRS has, and that cannot be satisfied by CMRS. As much as LMCC considers PMRS immune from change, so too it evidently expects that CMRS providers will resist change, but there is a basic difference between owners who are relatively satisfied with what they have, warts and all, and a business -- CMRS -- whose welfare depends on responding to customer concerns.

"A. Immediacy/Priority Access

PMRS users rely on their ability to communicate among work teams instantaneously in order to coordinate daily activities, as well as control emergency situations. The timing of these coordinated communications is critical in many environments and could endanger the safety of the team or the public if delayed for even a fraction of a second. Priority access is particularly necessary during disasters and emergencies when public telecommunications circuits are often severed or jammed with calls. Citing an example of "communications gridlock in a Petition for Rule Making regarding cellular priority access for public safety; National Communications Systems points out that immediately following the Oklahoma City bombing incident, 'local response teams were having difficulty communicating when using cellular telephones.' "

Priority access is available in even cellular telephone systems (to Law Enforcement, for example), and it is illogical to ignore the possibility that it would be incorporated in private trunked systems whose members demanded it at the outset. Petitioner, instead of seeking what could best serve its members and the public's interest, denies the forces of technical innovation which are bringing about new modalities of communications and even social organization. If Petitioner has its way, the on-going evolution of communications in society will be denied resources it needs to progress and grow, to the detriment of society and the nation as a whole.

> "Another life threatening example of the need of PMRS users to have immediate access to open communications channels occurred in July 1995, when a Conrail police officer observed a trailer hanging over the side of a flatcar on a passing train. The officer was able to contact the train engineer by private radio in time to have the train stopped before reaching a tunnel. But for the ability to communicate this information quickly by radio, the trailer would have struck the wall of the tunnel upon entry, causing a major derailment. Even in less critical situations, the ability of users to prioritize calls is an integral part of their day-to-day operations. CMRS services, on the other hand, are not capable of prioritizing one customer's call over all others."

There seems no logical connection between the incident here reported, and the Petition under consideration. The facts do not allow the inference that only a private radio would have resulted in the happy outcome related. Moreover, the text does not eliminate the possibility that the private radio mentioned here was not a radio operating in the Private Radio service, but a personally owned radio, perhaps even Amateur or Citizens Band.

> "B. Control
>
> Having absolute control over their communications network is essential for many PMRS users. This includes having the ability to monitor and coordinate day-to-day operations, as well as respond to emergency situations. As stated in the PMRS Land Mobile Communications Requirements of Passenger and Freight Air Carriers at Airports report, airline companies are significantly impacted by radio communications and equipment failures. These failures present an air carrier with the risk of major disruptions to aircraft processing and possible outages if not remedied immediately: Two-way radio communication provides air carriers the ability to exercise precise tactical control over several thousand personnel who are necessary for the operation of a major air terminal. This control requires very intense and in-depth communication transactions which must be accomplished quickly and reliably . . . Two-way radio systems at major airports are complex systems which require many channel assignments in order to provide needed capacity and some degree of isolation and division of function."

A person who carries a scanning radio into an airport terminal is immediately struck by the relative congestion of a few channels in use, while others are unused for much of the time. In part, this is due to the exclusivity of each operation, with airlines each using a channel, or perhaps two, concessionaires using more, and airport operations and security using others more. The same number of channels, trunked, would serve many times the communications needed before reaching saturation, even without prioritizing users.

> "As a consequence, most airlines staff their own radio maintenance facilities at major airports so that they can exert full control over maintenance and restore activities. This is a recurring cost commitment on their part, but one which is fully justified by the economic risk inherent in a radio system outage."

Having been inconvenienced by aircraft control and electronic system malfunctions more than once, this writer is able to testify that airlines often do not have maintenance facilities at airports into which they fly. And in general, few users depend on their own resources to repair radios they own, but contract out maintenance. It is possible Petitioner here means swapping out bad for good sets. That is not what this writer, who in the military has spent many hours at the bench and on the flight line himself, would consider a "radio maintenance facility." Being proved wrong on this would, however, be some comfort while traveling.

> "A PMRS user's control over its network could also be severely inhibited under a CMRS service contract should the carrier change its network, merge with or acquire another company, or cease doing business altogether. Continual increases in access charges or usage rates could also lessen a user's ability to control financial expenditures for its communications network."

Regardless of what airlines do, most radio users do not maintain equipment themselves. They simply cannot afford full-time radio repairmen when their business has nothing to do with radio save using it. Because this is so, they contract out this service, obtaining an expertise they would not otherwise have available. This is applicable to the argument Petitioner makes here; radio users, PMRS or not, do and must rely on others over whose businesses they exert no direct control. This argument Petitioner makes here is not relevant to the proceeding at hand, and if there are issues of this sort which might be, the proper place to resolve them is in the contractual arrangements which lead to the services provided.

> "C. Capacity

> PMRS users require flexibility in their communications systems to handle the need for increased capacity during peak periods of operations. Requirements for increased capacity vary dramatically from one type of PMRS user to another. Some PMRS users require additional capacity only at certain times of the day week or month, while others have several peak operating periods throughout the day. In a study of airline carrier usage, several five-channel systems were observed to have peak sustained channel request rates as high as 1,000 dispatches per hour over a 15-30 minute period against a longer-term background rate of approximately 600 dispatches per hour over several hours. While air carriers make the economic commitment to pay extra for systems that accommodate these peak; periods, common carrier operators would be unlikely to make such an investment."

This is a common problem in communications, and one has been well studied over the years. especially by telephone companies. While it might seem as if a large amount of excess capacity is needed to accommodate such surges, this is in fact not the case. A properly designed trunking system would require excess capacity of only a fraction of its normal carrying capacity to meet peak service demands. The same, however is not true of a dedicated, single-user system, which might require five or ten times the capacity it normally uses to handle occasional surges without blockage. The result of these facts is that Petitioner actually argues here against its own proposal: a properly designed trunking system can absorb larger peak calling periods than an individual system of size proportional to normal use. And Petitioner implicitly says so, thus reversing the argument made above, in the next example:

> "The extent of increased capacity during peak periods also varies from user to user. The International Taxicab and Livery Association (ITLA) for instance, found in a recent study that over 5,600 one-way transmissions are executed during an average peak busy hour. In fact, many PMRS systems are engineered to handle more capacity than CMRS systems. This capacity is necessary for PMRS users to coordinate their activities in responding to emergencies or natural disasters. During these emergencies, PMRS users perform an invaluable public service and must be guaranteed sufficient capacity to effectively deal with these life threatening situations. PMRS users that are in control of their own systems can administer flexibility and accommodate peak operating periods by accessing additional channels that are shared with users whose activities decrease during this same period. " (Underline added)

Having said, incorrectly, that CMRS systems would need more carrying capacity than individual systems to provide peak calling hour service, Petitioner now says that PMRS systems need -- and have -- more capacity. This need can be justified for some types of resource, but it is not appropriate here. First, not all PMRS licensees in a given area will respond in the same manner and at the same time to an emergency. Second, not all of those who do respond will have traffic of equal urgency. If the needs of PMRS licensees in an area were considered, and not merely the needs of individual users, more communications could be provided without adding more channels. but insistence on exclusivity and control leads to excessive demands on spectrum resources.

> "CMRS service providers, in contrast, normally design their networks to accommodate only the average capacity requirements for their total customer base and are unlikely to invest in ways to meet unique requirements for individual users such as these. "

The above is a gross oversimplification of the process by which trunk sizing is performed. A system designed to accommodate PMRS usage patterns would consider the needs of priority users in emergencies, volume users in peak periods, and occasional users during average periods, and it would provide satisfactory service without requiring large numbers of channels be held in reserve for peak periods as LMCC apparently is requesting. Petitioner improperly faults CMRS for communications shortages due to disasters, man-made or natural.

Petitioner has erred by equating cellular telephone trunk sizing with the needs of PMRS licensees in an emergency. This kind of mistake has been called "comparing apples and oranges," but in this case, it is more like comparing walnuts and coconuts.

> "D. Reliability
>
> Many Federal Government, state and industry agencies mandate safety compliance regulations for PMRS users that require highly reliable communication systems for day-to-day operations as well as for emergency situations or disaster recovery plans. A number of the requirements were detailed in the written testimony of several railroad, utility, and petroleum industry associations to the Senate Commerce Committee.
>
> Under the Pipeline Safety Act, for example, emergency response plans for gas pipelines must include reliable communications with fire, police and other public safety officials.

The North American Electric Reliability Council (NERC) standards also require reliable and secure telecommunications networks and the use of exclusive communications channels between the systems and control centers of adjacent electric systems.

The Federal Emergency Management Agency (FEMA) requires reliable primary and backup means of communications between a nuclear facility and tile utility's near-site emergency operations facilities, state and local emergency operations centers, radiological monitoring teams and the Nuclear Regulatory Commission.

Reliability of these communications systems must be demonstrated under emergency conditions that would overwhelm public or third party systems. Reliability means having continuous communications throughout an area of operation, whether that area covers all levels of a plant facility or connects multiple geographic regions required for users such as railroad and utility companies. CMRS services cannot provide reliable coverage for many PMRS users due to coverage limitations. For example, in the San Francisco Bay area, the California State Automobile Association has its emergency road service dispatcher linked directly to the local emergency dispatch, so that police officials can dispatch emergency road services without delay. Cellular use during a serious freeway accident can spike upward so significantly that this cooperative dispatch response by police officials and the automobile emergency service would be impossible if the auto club were forced to employ CMRS services."

LMCC is again insisting that cellular telephone service is the whole of CMRS. A Cellular mobile radio service can accommodate radio users, and not give automatic precedence to telephone callers, except for emergency calls. It is easier to reconfigure a CMRS system than a PMRS system, as incremental changes may be added in software and with incremental hardware updates. The ease and economy with which this may be accomplished should have persuaded Petitioner to follow the CMRS example; but instead Petitioner is attempting to preserve, not service, but structure. This does not serve the public interest, nor, in the end, Petitioners membership.

"E. Equipment Requirements

> Many PMRS users who need to communicate within environments that could become hazardous are required by law to use only equipment that meets certain safety standards. Petrochemical users, for example are required to operate with only Factory Mutual Approved intrinsically safe radios (which are designed not to spark when activated) for communications in explosive environments such as oil refineries. Currently, CMRS service providers do not offer intrinsically safe equipment and, therefore, cannot be used in these environments where communications are vital. The Rail Safety Enforcement and Review Act of 1992 requires the installation of two-way end-of-train devices, allowing coordination of movement between the locomotive and the rear of the train. The Federal Railroad Safety Act of 1970, as amended, requires the Secretary of Transportation to prescribe regulations and issue orders regarding rail safety, and Congress has mandated to the Secretary of Transportation to require the railroad industry to deploy two-way radio links for the initiation of emergency braking from the rear of a train.

Petitioner continues here to assume that because something has been the case in the past, it cannot be changed to meet future requirements. If there is a demand for intrinsically safe equipment, such instruments will be forthcoming. As for end-of-train devices and emergency braking devices, there is no reason why anyone would even attempt to use CMRS for these purposes, but they do not requires hundreds of channels to deploy, either. One-size-fits-all does not work for anyone; the advantages of CMRS technology lie in the fact that it is self-adjustable, where the PMRS "garment" must be taken apart and remade for each new use.

> "F. Geographic Requirements
>
> PMRS users require communications in even the most remote areas of the country where CMRS networks cannot provide coverage. The forestry industry, for example cannot be served by cellular or PCS devices as propagation characteristics make penetration for those technologies in dense wooded areas difficult, if not impossible. Other rural or remote areas are not serviced by CMRS systems as carriers tend to build out in densely populated areas where they can maximize their investment returns. While CMRS service providers are expanding their networks to some smaller metropolitan areas, many rural areas may never have access to these services. This eliminates the possibility for some PMRS users such as railroads, to deploy communications across wide geographic areas that encompass both major metro and rural areas. In a recent study conducted by Motorola, more than half of the non-public safety, PMRS system users surveyed stated that existing cellular service provided insufficient coverage to meet their needs. Most of these respondents cited cellular's insufficient coverage in rural areas while the remainder expressed concern about in-building penetration or regional service needs.

> Even in areas where CMRS services are available, a user may be required to contract with multiple carriers in order to provide adequate coverage for its area of operation. A large public utility for instance, may provide service over several states. In order for that utility to have seamless coverage across its service area, it would need to negotiate service contracts with multiple CMRS providers. Each provider may employ different equipment, adhere to different standards, or offer different services, making seamless coverage impossible. This poses a particular problem for PMRS licensees such as railroads, whose communications equipment must be interoperable along railway systems that may cross the entire country. In addition, variations in service charges and plans, contract terms and other expenses would make forecasting and controlling finances virtually unmanageable."

Petitioner has here identified a current deficiency in the way CMRS provides service. However, when it is suggested that present PMRS users utilize the technology of CMRS, it is not meant that it be applied in circumstances where it is not suitable. Certainly no one would suggest that PMRS disappear, as it has strengths of its own. However, the very areas in which spectrum congestion adversely affects PMRS users are those in which CMRS can best provide service. Again, satisfying the unique requirements of some PMRS users does nor take the expanse of spectrum Petitioner seeks to occupy.

> "American business and industry vitally depend on PMRS systems. CMRS carriers are simply not able to satisfy the many specialized requirements encountered in the business marketplace. Companies like Toyota, Weyerhaeuser, Coors, Boeing and Corning, among others, have concluded that CMRS systems will not satisfy their needs. In addition, critical infrastructure industries such as pipelines, utilities, and the railroads cannot entrust their crucial public safety communications needs to CMRS providers which may not provide the reliability required in life-threatening emergency situations. Carriers will not provide assurances of reliable coverage within plant facilities, or over wilderness timberlands; will not provide assurances of access in the event of disasters; and will not guarantee system reliability compliant with military contract specifications. In short, business and industry will continue to rely upon PMRS communication systems and require continued spectrum allocations to accommodate their needs."

LMCC repeatedly says that CMRS is unsuitable for some applications, but does not propose innovation on the part of PMRS users, or indeed, on the Commission's part. The Commission's charter includes finding new ways to solve old problems, and in this age, with communications becoming available to all, it is even more incumbent that the Commission encourage, even spur, innovative solutions to old problems.

29. Since the Petition's heart is massive expansion into spectrum used by other Services, it is appropriate to examine its proposals separately from arguments made in their support.

> "V. Future Quantitative Spectrum Requirements and Options
> The spectrum requirements analysis conducted by the LMCC reveals that future additional spectrum needs of the PMRS community are as follows: 15 MHz by the year 2000, 44 MHz by 2004, and 125 MHz by 2010 (44 MHz is inclusive of the 15 MHz, and the 125 MHz is inclusive of the 44 MHz)."

There is no reason to doubt Petitioner's sincerity in making this claim, however, it must be remembered that what is really needed is not MHz, but access to communications, and they are only the same thing is technical progress is discounted. Petitioner's request would result in less innovation, not more.

> "However, there is, not unexpectedly, a dearth of spectrum that might be used to satisfy the urgent immediate needs of the non-public safety PMRS, as well as the year 2010 needs. Therefore, the LMCC recommends the following:
> · Immediate needs be satisfied by a reallocation of 420-430 MHz, paired with 440-450 MHz, from Federal use to PMRS;
> · Immediate/mid-term needs be satisfied by FCC allocation of 1390-1400, 1427-1432, and 1670-1675 MHz to PMRS, pursuant to its reallocation to the private sector from the government;
> · Reallocate 85 MHz of the aeronautical band, 960-1215 MHz, to the PMRS by the year 2010 to satisfy longer term needs, shared with the developing DOD JTIDS/MIDS service."

Here is the core of the Petition which the rest of it attempts to support.

The request for immediate reallocation of the Federal bands at 420-430, and 440-450MHz, is evidently based on a desire to avoid the expense of newer equipment. However, it is actually more expensive to rebuild equipment than to purchase new, and there is no doubt that acquisition of new frequencies would be accompanied not by economizing on equipment, but by the purchase of new equipment, denser occupation of desirable communications sites, and more conflicts between users. Petitioner has proposed no new way of doing things that would prevent this from happening.

In addition, while the reallocation of Federal spectrum has long been viewed as desirable, it is not to a good thing to enter into with haste. Recent news has reminded us all that the world is not a safer place since the demise of the Soviet Union, and that frequencies allotted to the Federal Government, and to the military, are actually needed for those purposes.